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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,057	09/13/2000	Akira Ohtani	Q60771	7619

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EXAMINER

CHOWDHURY, TARIFUR RASHID

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 02/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/661,057	OHTANI ET AL.
	Examiner	Art Unit
	Tarifur R Chowdhury	2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 24 January 2003.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 2,3 and 5-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 2,3 and 5-8 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4) Interview Summary (PTO-413) Paper No(s) _____.

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. **Claims 3, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinata et al. (Hinata), USPAT 5,687,465 in view of Khan et al., (Khan), WO 97/39380 and Yuji Sakamoto (Yuji), JP 02-058527 and Suzuki et al., (Suzuki), USPAT 4,576,896.**

3. ~~Hinata discloses and shows a liquid crystal cell substrate comprising a polycarbonate film supporting substrate (9) (applicant's resin substrate) and, closely adhered thereon, a gas barrier layer (10), a resin hard coat layer (11) and a polarizing layer-(12) (Fig. 11, col. 5, lines 33-38).~~

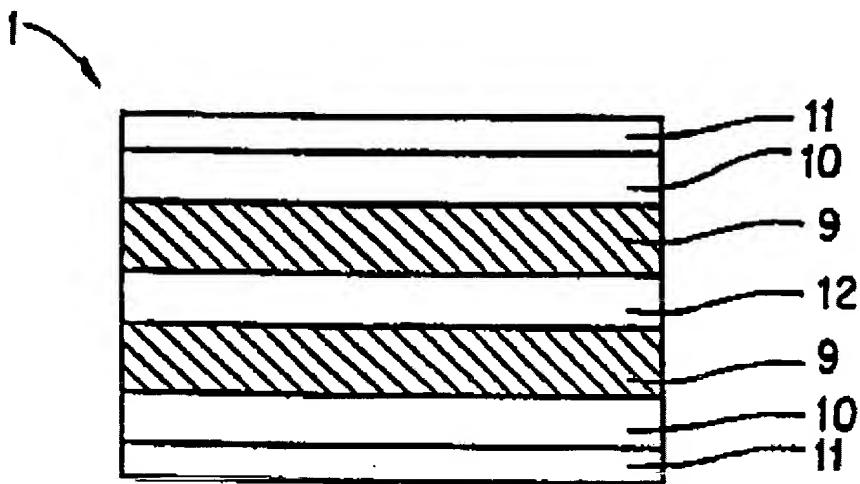


FIG.11

Hinata does not explicitly disclose that the resin hard coat layer is crosslinked. However, it is known in the art that a crosslinked resin layer provides better mechanical strength and has excellent heat resistance. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the resin layer of Hinata with a crosslinked resin layer since it will have the advantage of better mechanical strength and excellent heat resistance.

Hinata further differs from the claimed invention because he does not disclose that the polarizing layer comprising a coating such as a lyotropic substance containing a dichroic dye or a dichroic dye having lyotropic liquid crystallinity or a liquid crystal polymer layer containing a dichroic dye.

Khan discloses a liquid crystal display with polarizing layer wherein the polarizing layer comprises a coating. Khan further discloses that a polarizing coating formed from

a lyotropic liquid crystalline composition based on dichoric dyes provide high thermal and light stability (page 6, lines 13-21).

Khan is evidence that ordinary workers in the art of liquid crystal would find a reason, suggestion or motivation of using a polarizing layer comprising a coating such as a lyotropic substance containing a dichroic dye.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the polarizing layer of Hinata such that the polarizing layer comprising a coating of lyotropic substance containing a dichroic dye so that the polarizing layer will have the advantage of high thermal and light stability.

Hinata still differs from the claimed invention because he does not explicitly disclose the thickness of the polarizing layer being 5 μm or less and that the substrate is obtained by flow casting.

It is common and desirable practice in the art of liquid crystal to obtain a device that is lightweight and thin. Further, typical thickness for a polarizing layer is in the range of 5 to 80 μm (overlaps the claimed range at 5 μm) but is not limited thereto.

Further, as to forming the substrate by flow casting, it is common and known in the art to form a substrate by any suitable methods such as a casting molding method, a flow casting method, an injection molding method, etc.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have a thickness of about 5 to 80 μm for the polarizing layer to obtain a thin and light weight device and form the substrate by a flow casting method to avail a proven technology.

Still lacking is the limitation such that the substrate is formed from a liquid epoxy resin and a solid epoxy resin.

Yuji discloses a substrate that is formed from a liquid epoxy resin and a solid epoxy resin. Yuji further discloses that by forming a substrate from a liquid epoxy resin and a solid epoxy resin, it is possible to obtain a substrate that is outstanding in resistance to heat and moisture (abstract).

Yuji is evidence that ordinary workers in the art of liquid crystal would find a reason, suggestion or motivation to use a substrate that is formed from a liquid epoxy resin and a solid epoxy resin.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the substrate of Hinata by forming the substrate from a liquid epoxy resin and a solid epoxy resin so that a substrate that is outstanding in heat resistance and moisture is obtained, as per the teachings of Yuji.

Still lacking is the limitation that the resins used to form the substrate are alicyclic epoxy resin.

Suzuki discloses an optical recording medium wherein the substrate is made of alicyclic epoxy resin (col. 2, lines 40-42). Suzuki also discloses that alicyclic epoxy resins are preferably used because they are low in viscosity and hence excellent in castibility (col. 2, lines 61-63).

Suzuki is evidence that ordinary workers in the art of liquid crystal would find a reason, suggestion or motivation to use alicyclic epoxy resins to form a substrate.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the substrate of Hinata when modified by Khan and Yuji by forming the substrate using alicyclic epoxy resins so that low viscosity and thus excellent castibility is obtained, as per the teachings of Suzuki.

Accordingly, claims 3 and 5 would have been obvious.

Note: Regarding claim 3, applicant is claiming the product (a device) including a method (i.e. a process) of making the substrate. Therefore, claim 3 is considered as “product-by-process” claim. In spite of the fact that a product-by-process claim may recite only process limitations, it is the product, which is covered by the claim and not the recited process. Further, patentability of a claim to a product does not rest merely on a difference in the method by which the product is made. Rather, it is the product itself which must be new and unobvious.

As to claim 7, Hinata shows in Figure 11, that the polarizing layer (12) is in contact with one side of the supporting substrate (9) (applicant's resin substrate).

4. Claims 2, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinata in view of Khan and Yuji and Suzuki as applied to claims 3, 5 and 7 above and further in view of “HDBU” (High Density Build Up) Organic Package Technology that is first in the industry to employ “Laser via” method” by Kyocera Corporation, February 15, 1999 (Document A).

5. As to claims 2 and 6, Yoshida does not explicitly disclose that the resin substrate comprises a thermosetting epoxy resin.

Document A discloses the use of a substrate comprising thermosetting epoxy

resin. Document A further discloses that thermosetting resin provides superior reliability (page 2).

Document A is evidence that ordinary workers in the art would find a reason, suggestion or motivation of using a substrate comprising thermosetting epoxy resin.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the resin substrate of Hinata with a substrate that comprises thermosetting epoxy resin in order to obtain a substrate that provides superior reliability.

As to claim 8, Hinata shows in Figure 11, that the polarizing layer (12) is in contact with one side of the supporting substrate (9) (applicant's resin substrate).

Response to Arguments

6. Applicant's arguments with respect to claims 3, 5 and 7 have been considered but are moot in view of the new ground(s) of rejection.

Remarks: After conducting further search reference USPAT 4,576,896 was found which clearly teaches the use of alicyclic epoxy resin for forming a substrate.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

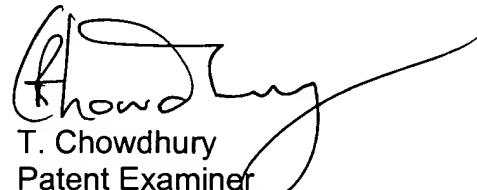
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (703) 308-4115. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 305-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7005 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.



T. Chowdhury
Patent Examiner
Technology Center 2800

TRC
February 12, 2003